Continental Conair Limited

Application
For
Certification

43/49MHz 25 Channel Cordless Telephone

(FCC ID:LBBFF688)

WO# 99009511
AL/at
May 18, 1999

FCC ID: LBBFF688

LIST OF EXHIBITS

MEASUREMENT/TECHNICAL REPORT

Continental Conair Limited - MODEL: FF688
FCC ID: LBBFF688

This report concerns (check one:) Original Grant X Class II Change _____

Equipment Type: Cordless Telephone (example: computer, modem, transmitter, etc.)

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? Yes ___ No X

If yes, defer until : _____ date

Company Name agrees to notify the Commission by: _____ date

of the intended date of announcement of the product so that the grant can be issued on that date.

Transition Rules Request per 15.37? Yes ____ No X

If no, assumed Part 15, Subpart C for intentional radiator - the new 47 CFR [10-1-96 Edition] provision.

Report prepared by:

Alfred Lo
Intertek Testing Services.
2/F., Garment Centre,
576 Castle Peak Road,
Kowloon, Hong Kong.
Phone: 852-2173-8530
Fax: 852-2785-5487

Table of Contents

List of attached file

Exhibit type	File Description	filename
Cover Letter	Letter of Agency	letter.pdf
Test Report	Test Report	report.doc
Operation Description	Technical Description	descri.pdf
Test Setup Photo	Radiated Emission for Base	base1.jpg, base2.jpg
Test Setup Photo	Radiated Emission for Handset	handset1.jpg, handset2.jpg
Test Setup Photo	Conducted Emission	conduct1.jpg to conduct3.jpg
Test Report	Conducted Emission Test Result	conduct.pdf
Test Report	Base Bandwidth Plot	bsbw.pdf
Test Report	Handset Bandwidth Plot	hsbw.pdf
External Photo	External Photo	ophoto1.jpg, ophoto2.jpg
Internal Photo	Internal Photo	iphoto1.jpg to iphoto17.jpg
Block Diagram	Block Diagram	block.pdf
Schematics	Circuit Diagram	circuit.pdf, rfcircuit.pdf
ID Label/Location	Label Artwork and Location	label.pdf
User Manual	User Manual	manual.pdf
Test Report	Auto Channel Selection Mechanism	auto.pdf

EXHIBIT 1
GENERAL DESCRIPTION

1.0 **General Description**

1.1 Product Description

The FF688 is a 43/49 MHz 25 Channel Cordless Telephone with Digital Answering Machine & Caller ID. The unit is capable of either tone or pulse dialing. The internal power supply's isolation is accomplished through a power transformer having an adequate dielectric rating. The circuit wiring is consistent under the requirement of part 68.

The handset unit consists of a keypad with twelve standard keys (0,...9,*,#), five function keys (Hold, Intercom, Flash, Memo & Redial/Pause), and one channel switch key. A talk key is provided to control pick/release telephone line in a toggle base.

The base unit has a page key, which is used to page the handset unit.

The circuit description is saved with filename: descri.pdf

Connection between the device and the telephone network is accomplished through the use of USOC RJ11C in the 2-wire loop calling central office line.

1.2 Related Submittal(s) Grants

This is an Application for Certification of a cordless telephone system. Two transmitters are included in this Application. This specific report details the emission characteristics of each transmitter. The receivers are subject to the verification authorization process, in accordance with 15.101(b). A verification report has been prepared for the receiver sections of each device. The device is also subject to Part 68 Registration.

1.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (1992). All measurements were performed in Open Area Test Sites. Preliminary scans were performed in the Open Area Test Sites only to determine worst case modes. For each scan, the procedure for maximizing emissions in Appendices D and E were followed. All Radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Justification Section**" of this Application.

1.4 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located at Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong. This test facility and site measurement data have been fully placed on file with the FCC.

EXHIBIT 2
SYSTEM TEST CONFIGURATION

2.0 **System Test Configuration**

2.1 Justification

For emission testing, the equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). During testing, all cables were manipulated to produce worst case emissions. The handset was powered by a fully charged battery.

For the measurements, the EUT is attached to a cardboard box and placed on the wooden turntable. If the base unit attaches to peripherals, they are connected and operational (as typical as possible). The handset is remotely located as far from the antenna and the base as possible to ensure full power transmission from the base. Else, the base is wired to transmit full power without modulation.

The signal is maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters. Detector function is in peak mode. Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance.

All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. Analyzer resolution is 100 kHz or greater. All emissions greater than 20 dBµV/m are recorded.

Radiated emission measurement were performed from 30 MHz to 1000 MHz.

2.2 EUT Exercising Software

The EUT exercise program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use.

For emissions testing, the units were setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing.

2.3 Support Equipment List and Description

The FCC ID's for all equipment, plus descriptions of all cables used in the tested system (included inserted cards, which have grants) are:

HARDWARE:

The unit was operated standalone. An AC adapter (provided with the unit) was used to power the device. Its description is listed below.

(1) AC adapter with two meter unshielded power cord permanently affixed.

CABLES:

(1) Telecommunication cable with RJ11C connectors (1m, unshielded), terminated

OTHERS:

There are no special accessories necessary for compliance of this product.

2.4 Equipment Modification

Any modifications installed previous to testing by Continental Conair Limited will be incorporated in each production model sold/leased in the United States.

No modifications were installed by ETL Division, Intertek Testing Services Hong Kong Ltd.

All the items listed under section 2.0 of this report are confirmed by:

Confirmed by:

Alfred Lo
Technical Supervisor
Intertek Testing Services
Agent for Continental Conair Limited

Signature

May 24, 1999 Date

EXHIBIT 3
EMISSION RESULTS

3.0 **Emission Results**

Data is included of the worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included.

3.1 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CF - AG

where FS = Field Strength in dBµV/m
RA = Receiver Amplitude (including preamplifier) in dBµV
CF = Cable Attenuation Factor in dB
AF = Antenna Factor in dB
AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows:-

FS = RR + LF

where FS = Field Strength in dBµV/m
RR = RA - AG in dBµV
LF = CF + AF in dB

Assume a receiver reading of 52.0 dBµV is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dBµV/m. This value in dBµV/m was converted to its corresponding level in µV/m.

RA = 52.0 dBµV/m
AF = 7.4 dB
CF = 1.6 dB
AG = 29.0 dB
FS = RR + LF
FS = 23 + 9 = 32 dBµV/m

RR = 23.0 dBµV
LF = 9.0 dB

Level in µV/m = Common Antilogarithm [(32 dBµV/m)/20] = 39.8 µV/m

3.2 Radiated Emission Configuration Photograph - Base Unit

Worst Case Radiated Emission

at 174.876 MHz

For electronic filing, the worst case radiated emission configuration photographs are saved with filename: base1.jpg and base2.jpg

3.3 Radiated Emission Data - Base Unit

The data on the following pages list the significant emission frequencies, the limit and the margin of compliance.

Judgement : Passed by 3.0 dB

****

TEST PERSONNEL:

Tester Signature

Tommy W. L. Leung, Engineer
Typed/Printed Name

May 18, 1999
Date

Company: Continental Conair Limited Date of Test: May 13, 1999
Model: FF688
Mode : TX-Channel 1

Table 1, Base unit

Radiated Emissions

Polarity	Frequency (MHz)	Reading (dBµV)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Net at 3m (dBµV/m)	Limit (dBµV/m)	Margin (dB)
V	43.719	73.1	10	16	67.1	80.0	-12.9
V	87.438	36.7	9	16	29.7	40.0	-10.3
H	131.157	43.2	13	16	40.2	43.5	-3.3
H	174.876	37.5	19	16	40.5	43.5	-3.0
H	218.595	32.4	17	16	33.4	46.0	-12.6

NOTES: 1. Peak Detector data

2. All measurements were made at 3 meters. Harmonic emissions not detected at the
3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative signs (-) in the margin column signify levels below the limits.

Test Engineer: Tommy W. L. Leung

Company: Continental Conair Limited Date of Test: May 13, 1999
Model: FF688
Mode : TX-Channel 25

Table 2, Base unit

Radiated Emissions

Polarity	Frequency (MHz)	Reading (dBµV)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Net at 3m (dBµV/m)	Limit (dBµV/m)	Margin (dB)
V	46.969	77.3	11	16	72.3	80.0	-7.7
V	93.938	34.5	10	16	28.5	43.5	-15.0
H	140.907	43.4	13	16	40.4	43.5	-3.1
H	187.876	39.5	16	16	39.5	43.5	-4.0
H	234.845	31.1	19	16	34.1	46.0	-11.9

NOTES: 1. Peak Detector data

2. All measurements were made at 3 meters. Harmonic emissions not detected at the
3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative signs (-) in the margin column signify levels below the limits.

Test Engineer: Tommy W. L. Leung

3.4 Radiated Emission Configuration Photograph - Handset

Worst Case Radiated Emission

at 499.925 MHz

For electronic filing, the worst case radiated emission configuration photographs are saved with filename: handset1.jpg and handset2.jpg

3.5 Radiated Emission Data - Handset

The data on the following pages list the significant emission frequencies, the limit and the margin of compliance.

Judgement : Passed by 3.1 dB

****

TEST PERSONNEL:

Tester Signature

Tommy W. L. Leung, Engineer
Typed/Printed Name

May 18, 1999
Date

Company: Continental Conair Limited Date of Test: May 13, 1999
Model: FF688
Mode : TX-Channel 1

Table 3, Handset

Radiated Emissions

Polarity	Frequency (MHz)	Reading (dBµV)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Net at 3m (dBµV/m)	Limit (dBµV/m)	Margin (dB)
V	48.762	78.5	11	16	73.5	80.0	-6.5
H	195.049	28.0	16	16	28.0	43.5	-15.5
H	243.811	34.5	20	16	38.5	46.0	-7.5
H	292.573	30.4	22	16	36.4	46.0	-9.6
H	341.335	26.2	24	16	34.2	46.0	-11.8
H	438.859	28.6	26	16	38.6	46.0	-7.4
H	536.383	30.8	28	16	42.8	46.0	-3.2
H	585.145	24.1	29	16	37.1	46.0	-8.9

NOTES: 1. Peak Detector data

2. All measurements were made at 3 meters. Harmonic emissions not detected at the
3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative signs (-) in the margin column signify levels below the limits.

Test Engineer: Tommy W. L. Leung

Company: Continental Conair Limited Date of Test: May 13, 1999
Model: FF688
Mode : TX-Channel 24

Table 4, Handset

Radiated Emissions

Polarity	Frequency (MHz)	Reading (dBµV)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Net at 3m (dBµV/m)	Limit (dBµV/m)	Margin (dB)
V	49.994	81.0	11	16	76.0	80.0	-4.0
H	199.889	32.9	12	16	28.9	43.5	-14.6
H	249.863	30.8	20	16	34.8	46.0	-11.2
H	299.829	30.1	22	16	36.1	46.0	-9.9
H	349.812	28.5	24	16	36.5	46.0	-9.5
H	449.810	27.6	26	16	37.6	46.0	-8.4
H	499.925	32.9	26	16	42.9	46.0	-3.1
H	549.915	29.8	28	16	41.8	46.0	-4.2
H	599.906	28.2	29	16	41.2	46.0	-4.8

NOTES: 1. Peak Detector data

2. All measurements were made at 3 meters. Harmonic emissions not detected at the
3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative signs (-) in the margin column signify levels below the limits.

Test Engineer: Tommy W. L. Leung

3.6 Line Conducted Configuration Photograph - Base Unit

Worst Case Line-Conducted Configuration

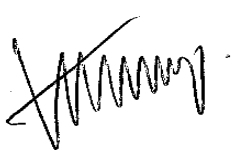
For electronic filing, the worst case line-conducted configuration photographs are saved with filename: conduct1.jpg to conduct3.jpg

3.7 Line Conducted Emission Configuration Data

The data on the following pages list the significant emission frequencies, the limit, and the margin of compliance.

Judgement : Passed by more than 20 dB

TEST PERSONNEL:



Tester Signature

Tommy W. L. Leung, Engineer
Typed/Printed Name

May 18, 1999
Date

Company: Continental Conair Limited Date of Test: May 13, 1999
Model: FF688

Conducted Emissions

For electronic filing, the conducted emission test result is saved with filename: conduct.pdf

EXHIBIT 4
FREQUENCY DEVIATION

4.0 **Frequency Deviation**

Two stability tests were performed -- Frequency stability versus input voltage and frequency stability versus temperature. For both measurements, a 1 GHz frequency counter with temperature controlled time base is used.

The counter is coupled to the transmitter by coiling a pickup wire over the transmitter antenna or directly attaching it to the antenna, assuming a 50Ω antenna is used.

The frequency stability is measured at room temperature by varying the supply voltage (AC or DC, as required) from 85% through 115% of normal operating voltage. This test is not applicable if the unit uses battery power. For battery powered equipment, the batteries are new and fully charged.

Stability versus temperature testing is carried out with the aid of a Tabai Espec Corp, Model PR-3F(W) environmental chamber. The following procedure is followed during testing:

1. Cool the device to -20^{o}C and allow it to stabilize for 30 minutes. Record the frequency.

2. Heat the oven to +50^{o}C and allow it to stabilize for 30 minutes. Record the frequency of operation.

3. Compare the measurements and a room temperature measurement against the assigned frequency tolerance.

The frequency tolerance of the carrier signal shall be maintained within ±0.01% of the operating frequency.

4.1.1 Measurement Data - Base Unit

Channel Frequency

Channel	Assigned Frequency (MHz)	Measured Frequency (MHz)	Tolerance %
1	43.72000	43.71883	-0.00268
2	43.74000	43.73883	-0.00267
3	43.82000	43.81883	-0.00267
4	43.84000	43.83883	-0.00267
5	43.92000	43.91883	-0.00266
6	43.96000	43.95882	-0.00268
7	44.12000	44.11882	-0.00267
8	44.16000	44.15881	0.00269
9	44.18000	44.17881	-0.00269
10	44.20000	44.19881	-0.00269
11	44.32000	44.31881	-0.00269
12	44.36000	44.35881	-0.00268
13	44.40000	44.39880	-0.00270

4.1.1 Measurement Data - Base Unit (Cont'd...)

Channel Frequency

Channel	Assigned Frequency (MHz)	Measured Frequency (MHz)	Tolerance %
14	44.46000	44.45881	-0.00268
15	44.48000	44.47881	-0.00268
16	46.61000	46.60875	-0.00268
17	46.63000	46.62875	-0.00268
18	46.67000	46.66875	-0.00268
19	46.71000	46.70875	-0.00268
20	46.73000	46.72875	-0.00267
21	46.77000	46.76875	-0.00267
22	46.83000	46.82874	-0.00269
23	46.87000	46.86874	-0.00269
24	46.93000	46.92874	-0.00268
25	46.97000	46.96874	-0.00268

4.1.2 Measurement Data - Base Unit - Channel 1

Frequency Stability

Frequency Stability versus Source Voltage

	Voltage (Vac)	**Assigned Frequency (kHz)**	**Measured Frequency (kHz)**	**Frequency deviation (kHz)**	**Tolerance % (x 10^{-3})**
Nominal	120	43,720.00	43,718.83	-1.17	-2.68
85 %	102	43,720.00	43,718.83	-1.17	-2.68
115 %	138	43,720.00	43,718.83	-1.17	-2.68

Frequency Stability versus Temperature

Temperature (°C)	**Assigned Frequency (kHz)**	**Measured Frequency (kHz)**	**Frequency deviation (kHz)**	**Tolerance (%) (x 10^{-3})**
-20	43,720.00	43,719.07	-0.93	-2.13
25	43,720.00	43,718.83	-1.17	-2.68
50	43,720.00	43,718.67	-1.33	-3.04

4.1.2 Measurement Data - Base Unit - Channel 25

Frequency Stability

Frequency Stability versus Source Voltage

	Voltage (Vac)	**Assigned Frequency (kHz)**	**Measured Frequency (kHz)**	**Frequency deviation (kHz)**	**Tolerance % (x 10^{-3})**
Nominal	120	46,970.00	46,968.74	-1.26	-2.68
85 %	102	46,970.00	46,968.74	-1.26	-2.68
115 %	138	46,970.00	46,968.74	-1.26	-2.68

Frequency Stability versus Temperature

Temperature (°C)	**Assigned Frequency (kHz)**	**Measured Frequency (kHz)**	**Frequency deviation (kHz)**	**Tolerance (%) (x 10^{-3})**
-20	46,970.00	46,969.00	-1.00	-2.13
25	46,970.00	46,968.74	-1.26	-2.68
50	46,970.00	46,968.57	-1.43	-3.04

Test Results : From the two sets of tables for Base Unit - channel 1 & channel 25, the largest deviation from nominal frequency was 1430 Hz, which was 0.0030% compared to the standard test frequency. The required minimum standard is 0.01% in §15.233(g)

4.2.1 Measurement Data - Handset

Channel Frequency

Channel	Assigned Frequency (MHz)	Measured Frequency (MHz)	Tolerance %
1	48.76000	48.75997	-0.00006
2	48.84000	48.83996	-0.00008
3	48.86000	48.85996	-0.00008
4	48.92000	48.91996	-0.00008
5	49.02000	49.01996	-0.00008
6	49.08000	49.07996	-0.00008
7	49.10000	49.09996	-0.00008
8	49.16000	49.15996	-0.00008
9	49.20000	49.19996	-0.00008
10	49.24000	49.23996	-0.00008
11	49.28000	49.27996	-0.00008
12	49.36000	49.35996	-0.00008
13	49.40000	49.39996	-0.00008

4.2.1 Measurement Data - Handset (Cont'd...)

Channel Frequency

Channel	Assigned Frequency (MHz)	Measured Frequency (MHz)	Tolerance %
14	49.46000	49.45996	-0.00008
15	49.50000	49.49996	-0.00008
16	49.67000	49.66996	-0.00008
17	49.84500	49.84495	-0.00010
18	49.86000	49.85996	-0.00008
19	49.77000	49.76995	-0.00010
20	49.87500	49.87496	-0.00008
21	49.83000	49.82995	-0.00010
22	49.89000	49.88995	-0.00010
23	49.93000	49.92996	-0.00008
24	49.99000	49.98997	-0.00006
25	49.97000	49.96996	-0.00008

4.2.2 Measurement Data - Handset - Channel 1

Frequency Stability

Frequency Stability versus Source Voltage

	Voltage (Vdc)	**Assigned Frequency (kHz)**	**Measured Frequency (kHz)**	**Frequency deviation (kHz)**	**Tolerance % (x 10^{-3})**
Nominal	3.6	48,760.00	48,759.97	-0.03	-0.06
85 %	3.06	48,760.00	48,759.92	-0.08	-0.16
115 %	4.14	48,760.00	48,760.01	0.01	0.02

Frequency Stability versus Temperature

Temperature (^{o}C)	**Assigned Frequency (kHz)**	**Measured Frequency (kHz)**	**Frequency deviation (kHz)**	**Tolerance (%) (x 10^{-3})**
-20	48,760.00	48,760.23	0.23	0.47
25	48,760.00	48,759.97	-0.03	-0.06
50	48,760.00	48,759.75	-0.25	-0.51

4.2.2 Measurement Data - Handset - Channel 25

Frequency Stability

Frequency Stability versus Source Voltage

	Voltage (Vdc)	**Assigned Frequency (kHz)**	**Measured Frequency (kHz)**	**Frequency deviation (kHz)**	**Tolerance % (x 10^{-3})**
Nominal	3.6	49,970.00	49,969.96	-0.04	-0.08
85 %	3.06	49,970.00	49,969.90	-0.10	-0.20
115 %	4.14	49,970.00	49969.99	-0.01	-0.02

Frequency Stability versus Temperature

Temperature (^{o}C)	**Assigned Frequency (kHz)**	**Measured Frequency (kHz)**	**Frequency deviation (kHz)**	**Tolerance (%) (x 10^{-3})**
-20	49,970.00	49,970.22	0.22	0.44
25	49,970.00	49,969.96	-0.04	-0.08
50	49,970.00	49,969.74	-0.26	-0.52

Test Results : From the two sets of tables for Handset - channel 1 & channel 25, the largest deviation from nominal frequency was 260 Hz, which was 0.0005% compared to the standard test frequency. The required minimum standard is 0.01% in §15.233(g)

EXHIBIT 5
OPERATING BANDWIDTH

5.0 **Operating Bandwidth**

For measurements of bandwidth, the following procedure was followed by the test engineer:

(1) Set up the equipment such that the antenna is located close enough to give a full scale deflection of the unmodulated carrier.

(2) Plot the unmodulated carrier. Any residual guard tones should be left in place, as these will be present at all times in actual operation.

(3) Plot the bandwidth with all alerting tones active. These include ringing and "call" signals from the base, and any intercom functions available in the handset.

(4) Determine the worst case bandwidth using the following procedure:

(a) Disable all internal modulations, if possible.

(b) Apply a 2500 Hz signal to the audio input.

(c) Vary the input signal level and observe on the spectrum analyzer the waveform. Vary
unit until a maximum deflection is observed. Record the input signal level. Record and plot the bandwidth deflection (100% modulation) measured at -26 dBC.

(d) **FOR A DEVICE WITH MODULATION LIMITING:**

Apply a 2500 Hz signal with the input level 16 dB greater than the level which produces 50% modulation. Plot and record the bandwidth.

(e) **FOR A DEVICE WITHOUT MODULATION LIMITING:**

Apply a 2500 Hz signal with the input level set for 85% modulation. If not possible, maximize the modulation percentage. Plot and record bandwidth.

(5) Complete the tables on the following pages.

5.1 Base Unit - Channel 1

Operating Bandwidth

kHz from Carrier	Amplitude Down from Carrier (dB)	Limit (kHz)
-8.08/7.92	26	±10
- 20	66.28	N/A
+ 20	65.71	N/A

Base Unit - Channel 25

kHz from Carrier	Amplitude Down from Carrier (dB)	Limit (kHz)
-8.29/8.21	26	±10
- 20	65.48	N/A
+ 20	66.21	N/A

Test Result: From the above two tables for Base Unit-channel 1 & channel 25, the modulated signal from base unit closest to band edge was 1.71 kHz above the lower band edge 46.960 MHz according to §15.233(d)

Bandwidth Plot - Base Unit

For electronic filing, the bandwidth plots are saved with filename: bsbw.pdf

5.2 Handset - Channel 1

Operating Bandwidth

kHz from Carrier	Amplitude Down from Carrier (dB)	Limit (kHz)
-8.66/8.59	26	±10
- 20	63.43	N/A
+ 20	66.28	N/A

Handset - Channel 25

kHz from Carrier	Amplitude Down from Carrier (dB)	Limit (kHz)
-8.04/8.21	26	±10
- 20	64.57	N/A
+ 20	63.43	N/A

Test Result: From the above two tables for Handset-channel 1 & channel 25, the modulated signal from handset closest to band edge was 1.34 kHz above the lower band edge 48.750 MHz according to §15.233(d)

Bandwidth Plot - Handset

For electronic filing, the bandwidth plot is saved with filename: hsbw.pdf

EXHIBIT 6
EQUIPMENT PHOTOGRAPHS

6.0 **Equipment Photographs**

For electronic filing, the photographs are saved with filename: ophoto1.jpg to ophoto2 .jpg & iphoto1.jpg to iphoto17.jpg

EXHIBIT 7
PRODUCT LABELLING

7.0 **Product Labelling**

For electronic filing, the FCC ID artwork and location are saved with filename: label.pdf

EXHIBIT 8
TECHNICAL SPECIFICATIONS

8.0 **Technical Specifications**

For electronic filing, the block diagram and circuit diagram are saved with filename: block.pdf, circuit.pdf and rfcircuit.pdf

EXHIBIT 9
INSTRUCTION MANUAL

9.0 Instruction Manual

For electronic filing, a preliminary copy of the Instruction Manual is saved with filename: manual.pdf.

Please note that the required FCC Information to the User can be found on Page 16 of this manual.

This manual will be provided to the end-user with each unit sold/leased in the United States.

EXHIBIT 10
SECURITY CODE INFORMATION

10.0 Security code information

The telephone has an internal security code with 65,536 possible combinations. Each time you pick up the HANDSET, the code is randomly set to a new combination.

Communication between HANDSET and BASE UNIT may not be possible in any of the following situation:

1. After a power failure.
2. After relocation the BASE UNIT by disconnecting the AC adaptor.
3. After replacing the HANDSET battery.

To reset, place the HANDSET on the BASE UNIT for 2 to 5 seconds.

EXHIBIT 11
AUTOMATIC CHANNEL SELECTION

11.0 Automatic Channel Selection

The mechanism of automatic channel selection is saved with filename: auto.pdf